

### 2.5.3 DESIGN DEVELOPMENT PHASE CHECKLIST (Design Development - 60% completion)

#### Outline

1. General
2. Architectural
3. Civil
4. Structural
5. Mechanical
6. Electrical
7. Telecommunications
8. Code/Permits
9. Equipment
10. Cost

#### 2.5.3.1 General

1. All design review items from the Schematic Design checklist, in addition to the items that follow:
2. Submit an updated "Permits Certifications, and Approvals Checklist" (DPW form #330).
3. All applicable permit applications either must be approved or in review by the regulatory agency(ies).
4. Refer to the "Specification Requirements" Section 3.1 this Manual.
5. Any environmental document shall be reviewed to ensure that all agreed mitigation measures have been incorporated in the drawings and specifications.

#### 2.5.3.2 Architectural

1. Title sheet with small plan to show project location related to adjacent roads and streets and other structures.
2. Plot plan with project limit lines and north arrow.
3. Floor and roof plans at 1/8" scale (min.), fully dimensioned, and indicate the dimensions of all egress components, doors, stairs, aisles, passages, etc.
4. Building sections shall be as required to illustrate all construction methods.
5. Elevations: identify the materials and show dimensions and grades.
6. Reflected ceiling plans; typical and special details.
7. Door and Finish schedules.
8. Layout of equipment and furniture.
9. Handicapped – provide access provisions: doors, ramps elevators, toilets, phones, drinking fountains, emergency exits, lights, alarms, etc.
10. Indicate rated walls on floor plans and include legend.
11. Specification; translate the outline into the three part, CSI format. Use the latest CSI numbering format.
12. Supplementary General Conditions: Make first adaptation of this document to the project; include agency operational constraints and site constraints on the contractors operations and activities.
13. Prepare an accurate cost estimate based on the design development documents.
14. All architectural and engineering decisions are to be finalized by the conclusion of the DD phase.
15. Framed color perspective of project (per A/E contract); include project name, project number and A/E name.

16. A/E to provide DPW-Project Manager with the name of firm selected to prepare architectural rendering. A/E or architectural renderer to submit 8"x10" samples of the work to DPW for review and comment. The samples shall demonstrate the technique, quality and media of the proposed rendering.
17. Location, sizes, and finish schedule of Mechanical, Electrical and Telecommunication rooms. Coordinate with "Mechanical" Section 2.5.3.5, "Electrical" Section 2.5.3.6 and "Telecommunication" Section 2.5.3.7 all in this Manual.
18. Roofing – Submit an analysis of the roof systems you are considering, with a benefit analysis for each, to justify the system and the cost.

### **2.5.3.2 Civil**

1. Exact location and elevation of building(s) shown.
2. Locations of subsurface investigations related to established existing features and subsurface investigations information.
3. Show finished grade contours, benchmark and a graphic legend. Also verify conditions at the site.
4. Locate utilities as to elevation, size and direction.
5. Show roads, parking areas and site improvements, with sections.
6. Comply with State Department of Public Health written criteria.
7. Show existing and proposed planting.
8. Show existing and proposed surface treatment and drainage.
9. Include soil erosion and sediment control/storm water pollution control plan, text, and details, and a general permit registration or individual permit, if required.
10. Proposed utility hook-ups and any easements, if needed.
11. General site work detail.
12. Ensure topographical and boundary CAD drawings comply with the standards and criteria in "Boundary and Topographic Survey Requirements" Section 2.3.6 of this manual.

### **2.5.3.4 Structural**

1. Basement - foundation plans including foundation and wall design.
2. Floor and framing plans.
3. Sizes of typical members/ types of construction.
4. Fireproofing.
5. Indicate bottom of footing, and top of steel, elevations based upon site survey datum.
6. Seismic criteria and information per BOCA.
7. Footing schedule and basic column framing plan.

### **2.5.3.5 Mechanical**

1. Revise life cycle cost analysis to reflect final heating/cooling loads and cost estimate. See also "Energy Issues", Energy Conscious Construction (NU), or Energy Blueprint (UI) Section 2.4.4 of this Manual.
2. Floor Plans drawn to 1/8" or 1/4" scale.
3. Complete pipe and duct layout with flow arrows on pipes and sizes for main ducts.
4. Indicate smoke walls and show fire dampers and smoke dampers. Show exterior louvers and shutters.
5. Boiler and fan rooms drawn to 1/4":1'0" min. scale. Fan room ductwork drawn "two Line". Show service areas around equipment.
6. All equipment, including equipment furnished by others but connected under Division 23 (Heating Ventilating, and Air-Conditioning), should be shown.

7. HVAC air and water flow diagrams developed to include flow quantities and motor horsepower.
8. Preliminary schedule and detail sheets. Schedules and details to be "Blocked out" and titled.
9. Roof Plan: show location and weight for all roof mounted equipment. Also show all plumbing vents and other roof penetrations.
10. Specifications in final format. All sections except equipment and temperature control sequence of operation, to be complete. Insert title sheets of sections omitted but are to be included.
11. Fire Protection section of specifications shall include hydrant "three point" flow test data. Ref. also to "Fire Protection and Water Supply" Section 2.4.7 of this Manual.
12. Sprinkler section of specifications shall include pertinent information from "Building Components", Section 2.4.11.13 Division 21 Fire Suppression.
13. The plans and specifications should be sufficiently developed to prepare a reliable cost estimate.
14. Include in the contract a provision for computer software and hardware in all equipment, components and systems to be compliant with year 2000 (Y2K), and that the complete systems be tested prior to acceptance by the owner.

### **2.5.3.6 Electrical**

1. Site utility details for electric, telephone, CATV, Fire Alarm, Security, Data links and any other specialized electrical or electronic ties. Review design scope with Architect, DPW and Agency. Verify conditions on site. (List contact engineer and telephone number of each utility. Submit copy of Utility correspondence).
2. Power Distribution plan, to include a one-line diagram of incoming service, switchboards, transformers, panel boards, motor control centers, and other major equipment. Identify equipment, conduit and conductor sizes.
3. Lighting, power and system floor plans; show light fixtures, receptacles, motors, voice/data outlets, and conduit and conductor sizes.
4. Detail of new or upgraded emergency and life safety systems.
5. Detail standby generation system.
6. Indicate location, feeds, ratings and details of exterior/area lighting. Include a fixture and/or equipment schedules.
7. Fire alarm system: provide riser diagram and equipment locations. Include interface details with existing alarm system(s) and city or other connected lines. Visit site and submit checklist.
8. Provide equipment locations and riser diagrams for paging, CATV, CCTV, Security, voice/data, and other special systems.
9. Indicate all power distribution equipment on floor plans. Coordinate with other trades.
10. Provide specifications using CSI section numbers. Identify all equipment and systems used.
11. Provide telecommunications system needs as described in "Telecommunications" Section 2.5.3.7 this Manual.
12. Identify special requirements for computer rooms, data equipment, isolated grounds, UPS systems, oversized neutrals, special transformers, isolation panels, computer floor grounding, etc.
13. Provide connected loads for all circuits indicated on panel board schedule.
14. Indicate design foot-candle levels on the drawings.
15. Renovation work: prepare demolition drawings including confirmation and coordination of existing conditions at site. Use of "as-built" drawings without field verification will not be accepted.

16. Include in the contract a provision for computer software and hardware in all equipment, components and systems to be compliant with year 2000 (Y2K), and that the complete systems be tested prior to acceptance by the owner.

### **2.5.3.7 Telecommunications**

1. Indicate source of telephone service on site plan. Also location and size of BMDF / IDF rooms on floor plans. See also "Utility Hookups" Section 2.3.3, coordinate with "Architectural" Section 2.5.3.2 all in this Manual.
2. Indicate location of voice and data outlets on floor plans. Coordinate locations with agency representative.
3. Show proposed method of horizontal and vertical raceway and cable distribution for voice and data communications systems. Provide one line riser diagram of voice and data distribution systems.
4. Identify needs for power, HVAC, emergency standby or UPS systems, for computer rooms, BMDF and IDF Rooms.
5. See "Building Component" Section 2.4.11.16, Division 27 Communications – Voice and Data Raceway Distribution.
6. Renovation work: verify conditions in field. Provide wiring and terminations only if part of the scope of work.

### **2.5.3.8 Code/Permits**

#### Codes

1. Refer to schematic design submittal and update if required.
2. Update the "Building Information Form" (DPW form # 311) on drawings.
3. At the request of the DPW Code Reviewer, a letter from the local fire chief must be submitted to confirm the open perimeter accessibility of the building and location of fire hydrants.
4. Submit Statement of Special Inspections.

#### Permits

1. All applicable permit applications, either must be approved or in review by the regulatory agency(ies).
2. The Checklist shall be submitted with the design development phase to the designated DPW PM for all DPW Projects. The PM shall forward Copies of the Checklist to DPW Environmental Planning and DPW Code Services. Consultant shall supply sufficient copies.
3. Prior to submitting a Checklist, the consultant shall ensure he is using the latest Checklist version by checking on DPW's website ([www.ct.gov/dpw](http://www.ct.gov/dpw)) under "Forms".
4. For more detailed information regarding the Checklist and permit policies, refer to "DPW Procedures for DEP Permit Applications" Section 2.3.5

### **2.5.3.9 Equipment**

1. Food service: layout and details.
2. Laboratories.
3. Include in the contract a provision for computer software and hardware in all equipment, components and systems to be compliant with year 2000 (Y2K), and that the complete systems be tested prior to acceptance by the owner.

4. The equipment, components and systems includes but is not limited to, programmable thermostats, HVAC controllers, auxiliary elevators controllers, utility monitoring and control systems, fire detection and suppression systems, alarms, security systems and any other facilities control systems utilizing microchip, minicomputer, or programmable logic controllers.

### **2.5.3.10 Cost Estimate**

1. The cost estimate shall be further developed than the schematic phase.
2. If a Construction Administrator (hired by DPW) is involved with the project the costs shall be compared and reconciled.